Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1-52. (cancelled)

53. (currently amended) A method of testing a candidate compound for the ability to act as an agonist of a ~~high-affinity~~ melatonin receptor ligand, said method comprising:

a) ~~contacting said candidate compound with~~ providing a cell comprising an expression vector encoding a ~~high-affinity~~ melatonin receptor protein comprising an amino acid sequence ~~substantially identical~~ at least 80% identical to that of SEQ ID NO:12, or a melatonin binding fragment thereof, wherein the cell expresses on its surface said ~~high-affinity~~ melatonin receptor protein or melatonin binding fragment ~~thereof~~;

b) contacting said melatonin receptor protein or melatonin binding fragment with the candidate compound;

~~b)~~ c) measuring intracellular cAMP concentration in said cell; and

~~c)~~ d) where said contacting causes a decrease in intracellular cAMP concentration, identifying said candidate compound as an agonist of a ~~high-affinity~~ melatonin receptor ligand.

54-77. (cancelled)

78. (currently amended) A method of testing a candidate compound for the

ability to act as an agonist of a ~~high affinity~~ melatonin receptor ligand, said method comprising:

a) ~~contacting said candidate compound with~~ providing a cell comprising an expression vector encoding a ~~high affinity~~ melatonin receptor protein comprising an amino acid sequence ~~substantially identical~~ at least 80% identical to that of SEQ ID NO:6, or a melatonin binding fragment thereof, wherein the cell expresses on its surface said ~~high affinity~~ melatonin receptor protein or melatonin binding fragment ~~thereof~~;

b) contacting said melatonin receptor protein or melatonin binding fragment with the candidate compound;

~~b)~~ c) measuring intracellular cAMP concentration in said cell; and

~~c)~~ d) where said contacting causes a decrease in intracellular cAMP concentration, identifying said candidate compound as an agonist of a ~~high affinity~~ melatonin receptor ligand.

79. (cancelled)

80. (currently amended) A method of testing a candidate compound for the ability to act as an agonist of a ~~high affinity~~ melatonin receptor ligand, said method comprising:

a) ~~contacting said candidate compound with~~ providing a cell comprising an expression vector encoding a ~~high affinity~~ melatonin receptor protein, or a melatonin binding fragment thereof, wherein the expression vector comprises a sequence that hybridizes to a probe having the sequence of the complement of SEQ ID NO:5 under the following conditions: hybridization in 50% formamide, 1 M sodium chloride, 1% SDS, 10% dextran sulfate, 100 µg/ml denatured salmon sperm at 42 °C, and filters washed in 2x SSC, 1% SDS at 65 °C for 1 hour, and wherein the cell expresses on its surface said melatonin receptor protein or melatonin binding fragment;

b) contacting said melatonin receptor protein or melatonin binding fragment with the candidate compound;

~~b)~~ c) measuring intracellular cAMP concentration in said cell; and

~~c)~~ d) where said contacting causes a decrease in intracellular cAMP concentration, identifying said candidate compound as an agonist of a ~~high affinity~~ melatonin receptor ligand.

81. (currently amended) A method of testing a candidate compound for the ability to act as an agonist of a ~~high affinity~~ melatonin receptor ligand, said method comprising:

a) ~~contacting said candidate compound with~~ providing a cell comprising an expression vector encoding a ~~high affinity~~ melatonin receptor protein, or a melatonin binding fragment thereof, wherein the expression vector comprises a sequence that hybridizes to a probe having the sequence of the complement of SEQ ID NO:5 under the following conditions: hybridization in 25% formamide, 1 M sodium chloride, 1% SDS, 10% dextran sulfate, 100 µg/ml denatured salmon sperm at 42 °C, and filters washed in 2x SSC, 1% SDS at 55 °C for 1 hour, and wherein the cell expresses on its surface said melatonin receptor protein or melatonin binding fragment;

b) contacting said melatonin receptor protein or melatonin binding fragment with the candidate compound;

~~b)~~ c) measuring intracellular cAMP concentration in said cell; and

~~c)~~ d) where said contacting causes a decrease in intracellular cAMP concentration, identifying said candidate compound as an agonist of a ~~high affinity~~ melatonin receptor ligand.

82. (previously presented) The method of claim 81, wherein the expression vector comprises the sequence of SEQ ID NO:5.

83. (currently amended) A method of testing a candidate compound for the ability to act as an agonist of a ~~high affinity~~ melatonin receptor ligand, said method comprising:

a) ~~contacting said candidate compound with~~ providing a cell comprising an expression vector encoding a ~~high affinity~~ melatonin receptor protein, or a melatonin binding fragment thereof, wherein the expression vector comprises a sequence that hybridizes to a probe having the sequence of the complement of SEQ ID NO:11 under the following conditions: hybridization in 50% formamide, 1 M sodium chloride, 1% SDS, 10% dextran sulfate, 100 µg/ml

denatured salmon sperm at 42 °C, and filters washed in 2x SSC, 1% SDS at 65 °C for 1 hour, and wherein the cell expresses on its surface said melatonin receptor protein or melatonin binding fragment;

b) contacting said melatonin receptor protein or melatonin binding fragment with the candidate compound;

~~b)~~ c) measuring intracellular cAMP concentration in said cell; and

~~c)~~ d) where said contacting causes a decrease in intracellular cAMP concentration, identifying said candidate compound as an agonist of a ~~high affinity~~ melatonin receptor ligand.

84. (currently amended) A method of testing a candidate compound for the ability to act as an agonist of a ~~high affinity~~ melatonin receptor ligand, said method comprising:

a) ~~contacting said candidate compound with~~ providing a cell comprising an expression vector encoding a ~~high affinity~~ melatonin receptor protein, or a melatonin binding fragment thereof, wherein the expression vector comprises a sequence that hybridizes to a probe having the sequence of the complement of SEQ ID NO:11 under the following conditions: hybridization in 25% formamide, 1 M sodium chloride, 1% SDS, 10% dextran sulfate, 100 µg/ml denatured salmon sperm at 42 °C, and filters washed in 2x SSC, 1% SDS at 55 °C for 1 hour, and wherein the cell expresses on its surface said melatonin receptor protein or melatonin binding fragment;

b) contacting said melatonin receptor protein or melatonin binding fragment with the candidate compound;

~~b)~~ c) measuring intracellular cAMP concentration in said cell; and

~~c)~~ d) where said contacting causes a decrease in intracellular cAMP concentration, identifying said candidate compound as an agonist of a ~~high affinity~~ melatonin receptor ligand. --

85. (previously presented) The method of claim 84, wherein the expression vector comprises the sequence of SEQ ID NO:11.

86. (currently amended) A method of testing a candidate compound for the ability to act as an agonist of a ~~high affinity~~ melatonin receptor ligand, said method comprising:

a) ~~contacting said candidate compound with~~ providing a cell comprising an expression vector encoding a ~~high affinity~~ melatonin receptor protein that consists of the amino acid sequence of SEQ ID NO:12, or a melatonin binding fragment thereof, wherein the cell expresses on its surface said ~~high affinity~~ melatonin receptor protein or melatonin binding fragment ~~thereof~~;

b) contacting said melatonin receptor protein or melatonin binding fragment with the candidate compound;

~~b)~~ c) measuring intracellular cAMP concentration in said cell; and

~~c)~~ d) where said contacting causes a decrease in intracellular cAMP concentration, identifying said candidate compound as an agonist of a ~~high affinity~~ melatonin receptor ligand.

87. (currently amended) A method of testing a candidate compound for the ability to act as an agonist of a ~~high affinity~~ melatonin receptor ligand, said method comprising:

a) ~~contacting said candidate compound with~~ providing a cell comprising an expression vector encoding a ~~high affinity~~ melatonin receptor protein comprising the amino acid sequence of SEQ ID NO:6, or a melatonin binding fragment thereof, wherein the cell expresses on its surface said ~~high affinity~~ melatonin receptor protein or melatonin binding fragment ~~thereof~~;

b) contacting said melatonin receptor protein or melatonin binding fragment with the candidate compound;

~~b)~~ c) measuring intracellular cAMP concentration in said cell; and

~~c)~~ d) where said contacting causes a decrease in intracellular cAMP concentration, identifying said candidate compound as an agonist of a ~~high affinity~~ melatonin receptor ligand.

88. (currently amended) A method of testing a candidate compound for the ability to act as an agonist of a ~~high affinity~~ melatonin receptor ligand, said method comprising:

a) ~~contacting said candidate compound with~~ providing a cell comprising an expression vector encoding a ~~high affinity~~ melatonin receptor protein that comprises the amino acid sequence of SEQ ID NO:12, or a melatonin binding fragment thereof, wherein the cell expresses on its surface said ~~high affinity~~ melatonin receptor protein or melatonin binding fragment ~~thereof~~;

b) contacting said melatonin receptor protein or melatonin binding fragment with the candidate compound;

~~b)~~ c) measuring intracellular cAMP concentration in said cell; and

~~c)~~ d) where said contacting causes a decrease in intracellular cAMP concentration, identifying said candidate compound as an agonist of a ~~high affinity~~ melatonin receptor ligand.

89. (currently amended) A method of testing a candidate compound for the ability to act as an agonist of a ~~high affinity~~ melatonin receptor ligand, said method comprising:

a) ~~contacting said candidate compound with~~ providing a cell comprising an expression vector encoding a ~~high affinity~~ melatonin receptor protein consisting of the amino acid sequence of SEQ ID NO:6, or a melatonin binding fragment thereof, wherein the cell expresses on its surface said ~~high affinity~~ melatonin receptor protein or melatonin binding fragment ~~thereof~~;

b) contacting said melatonin receptor protein or melatonin binding fragment with the candidate compound;

~~b)~~ c) measuring intracellular cAMP concentration in said cell; and

~~c)~~ d) where said contacting causes a decrease in intracellular cAMP concentration, identifying said candidate compound as an agonist of a ~~high affinity~~ melatonin receptor ligand.

90. (new) The method of claim 53, wherein the melatonin receptor protein differs from SEQ ID NO:12 only by conservative substitutions.

91. (new) The method of claim 78, wherein the melatonin receptor protein differs from SEQ ID NO:6 only by conservative substitutions.